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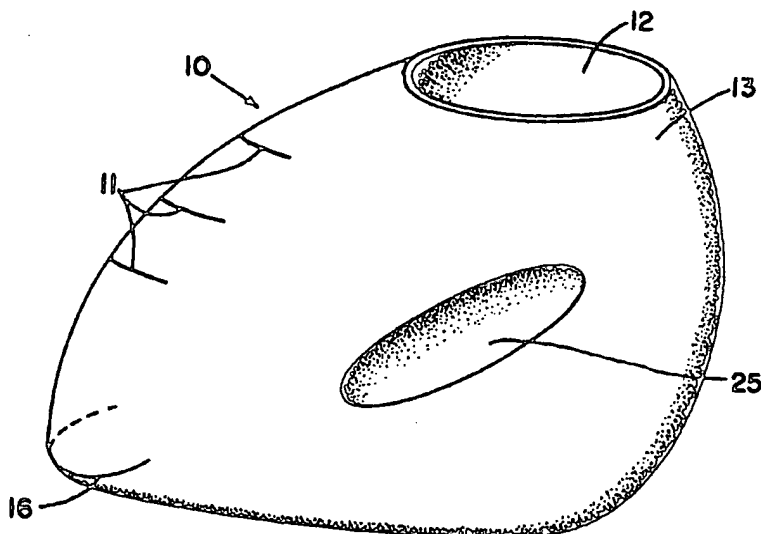
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(54) Title: PRETREATING DISPENSING DEVICE



## (57) Abstract

The present device relates to a pretreatment device for liquid detergent. The device comprises a squeezable container (13) with at least one cut (16). The cut (16) opens when a squeezing force is exerted upon the container (13). This allows an even spreading of the liquid detergent with a controlled adjustable flow.

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Pretreating Dispensing Device

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Field of the invention

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The present invention relates to a dosing and dispensing device for liquid laundry detergents. The device according to the present invention is particularly adapted to pretreat fabrics with a portion of liquid detergent.

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Background of the invention

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Dispensing devices for liquid detergent, which are to be introduced with the fabrics in the washing machine, are well known in the prior art. It is also known that it is possible to achieve a greater effectiveness in respect of stain removal by pretreating the fabrics without consuming a greater amount of liquid detergent. Pretreatment means that a certain amount of detergent is applied directly onto the dirty parts of said fabrics before they are washed in the machine. In the following these devices are called "pretreatment devices". In the following detergent means a detergent composition for the treatment of fabrics. This detergent composition may comprise washing additives, like bleaches, enzymes and/or others known in the art.

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Various pretreatment devices for liquid detergent are described in the prior art, for example in WO 92/09736 and WO 92/09737. These devices allow an application of said liquid detergent onto the fabrics before the washing cycle either with predetermined outlets or a removable pretreatment applicator respectively. Another approach is represented by EP-A-575 714. This document describes another pretreatment device for liquid detergent with a fixed applicator in form of a roller ball. This roller ball is able to spread the contained liquid detergent only in a predetermined direction.

10 The pretreating devices mentioned before allow an even spreading of the contained liquid detergent onto the fabric, i.e. the spreaded quantity is always the same. This way of even spreading does not consider that different stains need a different amount of liquid detergent during pretreatment. For example, stains can be made of certain constituents which need a more thorough  
15 pretreatment to increase its effectiveness. This can be achieved by applying a greater amount of the liquid detergent. A greater quantity is also needed depending on the dimensions of the stain itself. Therefore, we found that the effectiveness of stain removal is increased when a greater amount of pretreating detergent is applied upon the soiled surface of the fabric, since said  
20 surface can be pretreated more thoroughly.

It is not possible with the pretreatment devices of the prior art to adjust the amount of liquid detergent on the specific needs. Indeed, the outlets having a fixed aperture or the applicators, being for example a sponge, do not give a  
25 possibility to vary the quantity of liquid detergent to be spreaded on the fabric for a thorough pretreatment. It is therefore the object of the present invention to provide a device with an adjustable flow of the contained liquid detergent for the pretreatment.

30 It is another object of the present invention to provide a process for pretreating and washing fabrics in a washing machine with the dosing and dispensing device herein described.

Summary of the invention

The present invention is a dosing and dispensing device for liquid detergent which can be introduced in a washing machine with the fabrics and which is adapted for pretreating fabrics. Said device comprises a hollow body made from a flexible material, an opening and at least one cut through the thickness of a portion of said body. Said cut opens progressively when squeezing said device and said cut is substantially closed again when said squeezing stops.

Brief description of the figures

Figures 1 shows an embodiment of a dosing and dispensing device adapted for pretreatment according to the present invention.

Figures 2a and 2b illustrate the opening of the cut upon squeezing the dosing and dispensing device of Figure 1.

Figure 3 shows another embodiment of the present invention which facilitates the opening of the cut of the dosing and dispensing device.

Detailed description of the invention

The present invention is a dosing and dispensing device for containing liquid substances. An embodiment of the device is shown in Figure 1. The device (10) comprises a hollow body (13) made from a flexible material, an opening (12) and a cut (16). Said cut forms the pretreatment means. In the following "horizontal" means a direction or a plane parallel to the supporting basis of the pretreatment device in its upright position. Therefore "vertical" means a perpendicular direction or plane to the supporting basis of the pretreatment device in its upright position.

The hollow body (13) may be made of any water resistant, flexible material, withstanding also the temperatures reached in the washing machines. In

particular, for temperatures up to 95° C. Preferably said devices are transparent to allow a precise measuring and dosing of the liquid detergent into said devices. To facilitate the measuring and dosing, the device preferably comprises on the external and/or internal surface of the hollow body at least a dosing line (11).

The hollow body may be also deformable at least by the mechanical agitation during the wash cycle and resilient to regain its original shape after any deformation. This compression/springback helps wash liquor to enter in the hollow body of the device, and therefore a better dilution of the liquid detergent within the device is achieved even when said detergent are considered difficult to dispense by virtue of viscosity.

Through the opening (12) the filling of the device with the liquid detergent is achieved. When this device is put inside the washing machine with the fabrics, it also allows the dispensing of the liquid detergent into the wash liquor of the machine during the wash cycle. Therefore opening (12) is a filling and dispensing opening. The dimensions and the number of such openings (12) can be chosen by any person skilled in the art. The openings are preferably permanently open. They can be also subdivided in predetermined outlets or closable as described for example in EP-A-339 197.

Figure 2a is a horizontal cross sectional view of the pretreatment device (10) of the present invention with a vertical cut (16) in the closed position. As schematically illustrated in Figure 2b the cut (16) opens when device (10) is squeezed (arrows 19a and 19b) on the side walls (18). The squeezing is facilitated by the fact that the hollow body is made of a flexible material. Therefore, in the following a "flexible material" means a material which allows the squeezing of the dosing and dispensing device of the present invention, i.e. the opening of the cut (16).

The material of the device (10) has to be chosen to provide flexibility to the dosing and dispensing device. In this manner, the device of the present invention is able to be squeezed and the cut can be opened upon squeezing and closed by the release of the squeezing force. Preferably thermoplastic polymers are chosen. For example, polyethylene is a suitable material. Also conventional rubbers or thermoplastic elastomers can be used, such as

polyurethane. The form of the cut illustrated in Figures 1 and 2 is only one possible execution of various others. A cross-like or star-like cut are also possible without going beyond the scope of the present invention. Even several different cuts, for example parallel to each other, are possible.

5 The cut (16) in the closed configuration is completely leakage free, especially since the liquid detergents have a higher viscosity than water. No liquid detergent escapes through the closed cut. Squeezing said device (10), the cut (16) is opened, allowing the liquid detergent to flow out from the device through the cut. The squeezing force exerted determines the total aperture of the cut and influences the flow rate, therefore said force determines the amount of liquid detergent flowing out. The flow increases upon squeezing harder. By varying the squeezing force, the amount of liquid detergent is adjusted for the specific needs of certain parts of the pretreating surface. In this manner, an easy and accurately controlled spreading of a larger amount of said liquid can be achieved.

To enhance the flexibility especially in the region of the device around the cut, a different material distribution can be achieved. For example, the flexibility of the cut (16) is enhanced by using a thinner layer of the plastic materials mentioned before around said cut, i.e. the thickness of the wall around the cut is smaller than in other parts of the device. In this manner the cut is opened more easily, since less squeezing is needed to open said cut of the device. Less squeezing of the device means also that the volume of said device is not substantially reduced. Therefore the cut is opened without the possibility of squeezing out the contained liquid. These materials are also water resistant, withstanding the temperatures reached in the washing and/or dryer machines. Preferably the pretreatment devices of the present invention are transparent enough to allow a precise measuring and dosing of the liquid detergent into said devices.

Figure 3 illustrates another possible execution, which helps in the controlled opening of the cut (16). This Figure is again a horizontal cross sectional view of the pretreatment device of the present invention with a vertical cut. By applying a squeezing force, as indicated by the arrows 19a and 19b, the protuberations (21) and (23) come in touch pressing against each others. As a consequence the cut (16) is opened. In practice, the protuberations (21) and (23) act as lever

onto the opening of the cut. This means that the opening of the cut is facilitated through the application of the lever principle, which therefore allows to obtain a more precise control of the aperture of the cut and the flow through the cut.

5 As shown in Figures 1 and 2 the cut is preferably located in the bottom part of the device (10), with the opening (12) being on the top part of the same device. The cut (16) permits the spreading of the contained liquid (19) onto the fabric. The location of the cut (16) on the external wall (18) can be selected by  
10 any person skilled in the art. For the device (10) of Figure 1 and 2, the contained liquid automatically flows through the cut (16) once it is opened upon squeezing, since the minimum liquid detergent level is always higher than the cut (16). This means that the liquid detergent needs not to be poured through the cut, therefore the device remains in a horizontal position during the pretreatment operation.

15 Spreading the liquid detergent through the cut in a horizontal way, has the advantage that it is possible to control the amount of liquid detergent remaining in the dispenser with the help also of the dosing lines (11). This is not possible when the spreading means are located on the top part of the device, since said  
20 device has to be brought first into a pouring position to get part of the contained liquid detergent onto the spreading means. Nevertheless, the cut can be easily made on the top part of said device.

Gripping means (Fig. 1, 25) can also be provided in form of cavities, depressions or striations on the external surface of the hollow body (13). They  
25 facilitate the holding and the squeezing the device for the pretreatment. This type of means is easy to produce during the moulding of the body of the device. Specific dimensions or shapes of the device in general can be selected by any person skilled in the art.

30 A process comprising the following steps, which describe the pretreating and washing of fabrics in a washing machine with the dosing and dispensing device according to the present invention, is provided :

- 35 • a dose of the total quantity of liquid detergent to be utilized during the pretreatment and washing cycle is introduced into the dosing and dispensing device;



- pretreatment of the fabrics is executed with a controlled quantity of the liquid detergent dosage contained in said device and dispensed from said device through that cut;

5

- the thus pretreated fabrics are placed in the drum of the washing machine together with said dosing and dispensing device and with other non-pretreated fabrics.

Claims :

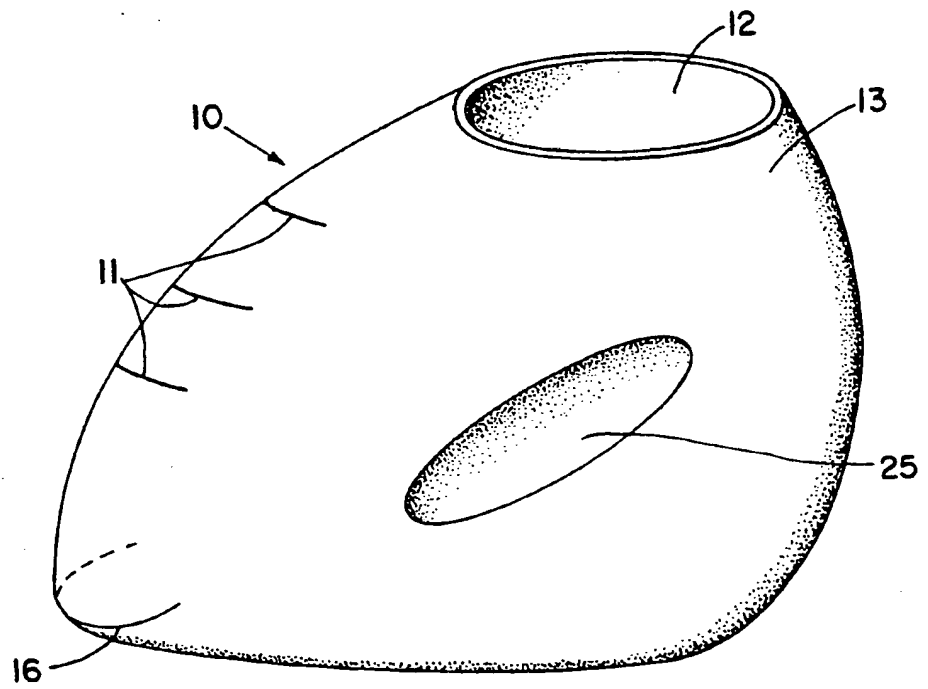
1. A dosing and dispensing device (10) for liquid detergent comprising a hollow body (13) made from a flexible material, an opening (12) and means to spread at least a portion of the contained liquid detergent onto a surface of fabric, characterized in that said means comprise at least one cut (16) through the thickness of a portion of said body (13), said cut (16) being progressively opened when said device (10) is progressively squeezed, and said cut (16) being substantially closed when said squeezing stops.
2. A device according to claim 1 characterized in that said cut (16) is located in the bottom part of said device (10).
3. A device according to any of the preceding claims characterized in that said device (10) comprises several cuts (16).
4. A device according to any of the preceding claims characterized in that said device (10) comprises dosing lines (11).
5. A device according to any of the preceding claims characterized in that said device (10) comprises gripping means (14).
6. A device according to any of the preceding claims characterized in that said device is made of elastic plastic material.
7. A device according to Claim 5 characterized in that the thickness of the wall of said device is smaller around said cut than in other parts of said device.
8. A device according to any of the preceding Claims characterized in that upon squeezing said device the protuberations (21) and (23) come in touch pressing against each others, which results in the opening of said cut (16).

9. Process for pretreating and washing fabrics in a washing machine with the dosing and dispensing device according to any of the preceding claims, characterized in that it comprises of the following steps :

- 5                   - a dose of the total quantity of liquid detergent to be utilized during the pretreatment and washing cycle is introduced into the dosing and dispensing device;
- 10                  - pretreatment of the fabrics is executed with a controlled quantity of the liquid detergent dosage contained in said device and dispensed from said device through said cut;
- 15                  - the thus pretreated fabrics are placed in the drum of the washing machine together with said dosing and dispensing device and with other non-pretreated fabrics.

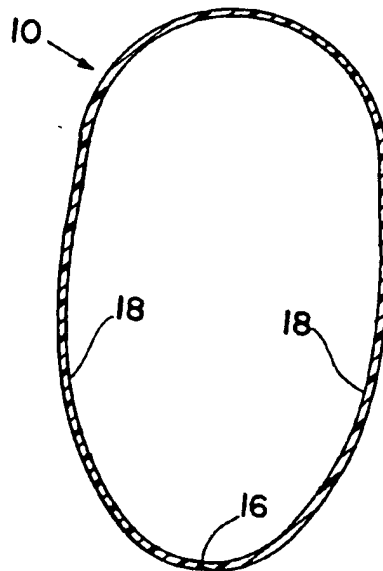
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**Fig. 1**

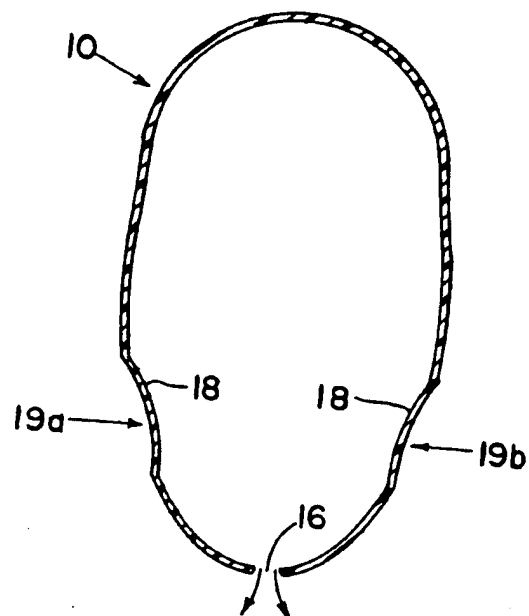


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**Fig.2a**

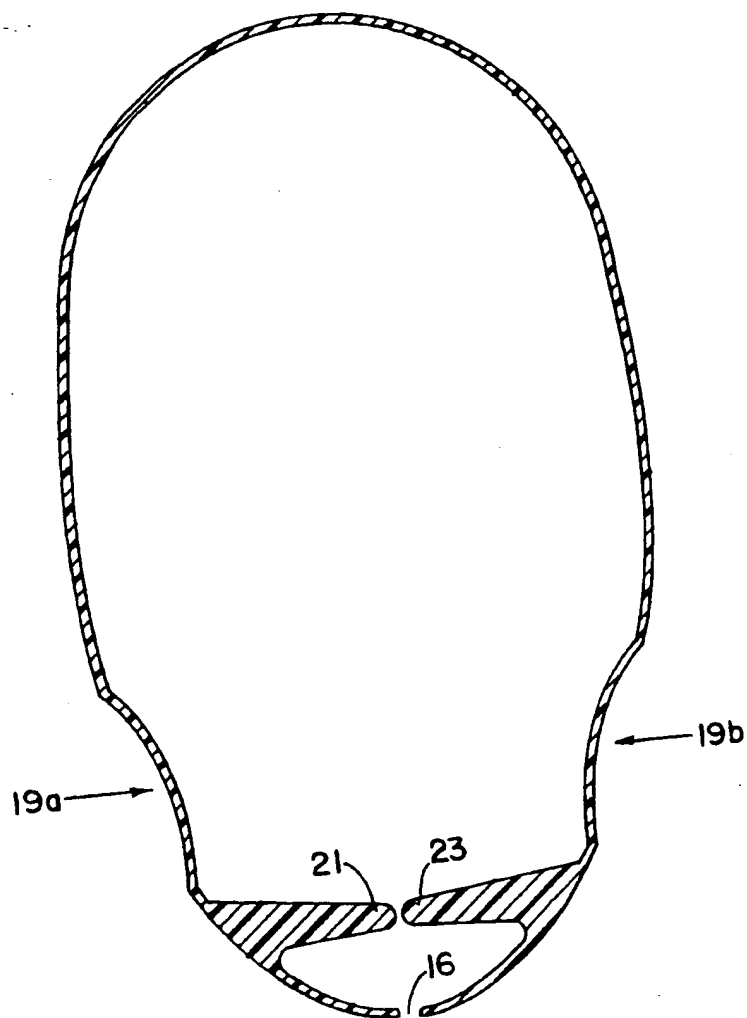


**Fig.2b**



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Fig. 3



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US95/04764

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :B67B 7/00  
US CL :222/001, 187, 212, 494; 68/17R; 206/05; 401/183, 263  
According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 222/001, 187, 212, 494; 68/17R, 96; 206/05; 401/183, 186, 263, 265, 266

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,241,852 (Klem) 30 December 1980, see the entire document	1, 2
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Y		3
Y	US, A, 5,379,919 (Gueret) 10 January 1995, see fig. 26b, and related written disclosure	3
Y	US, A, 5,341,660 (Berveglieri) 30 August 1994, see the entire document	1-3
Y	US, A, 5,355,541 (Rutter et al.) 18 October 1994, see the entire document	1-3
A	US, A, 4,889,441 (Tice) 26 December 1989	

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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*O* document referring to an oral disclosure, use, exhibition or other means	*G* document member of the same patent family
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Date of the actual completion of the international search  
19 JUNE 1995

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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US95/04764

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☒ Claims Nos.: 4-9  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐  
☐

- The additional search fees were accompanied by the applicant's protest.  
No protest accompanied the payment of additional search fees.